

What is claimed is:

1. A transmitter comprising:

a phase control loop for controlling a phase of a carrier being output from a transmission oscillator; and  
an amplitude control loop for controlling an amplitude of a transmission being output signal output from a power amplifier,

wherein a filter provided on said amplitude control loop and restricting a frequency band of said amplitude control loop is configured by a first passive filter including a capacitor and a resistor and a second passive filter including only a capacitor, and current-output type circuits are provided at respective front stages of said first passive filter and said second passive filter.

2. A transmitter comprising:

a transmission oscillator for generating a carrier;  
a power amplifier for amplifying a generated carrier signal;

a phase control loop which includes a phase detector for comparing a reference signal and a feedback signal and for outputting a signal corresponding to a phase difference thereof, and which controls a phase of the carrier being output from said transmission oscillator; and

an amplitude control loop which includes an amplitude detector for comparing a reference signal and a feedback signal and for outputting a signal corresponding to an amplitude difference thereof, and which controls an

amplitude of a transmission being output signal output from said power amplifier,

wherein a filter provided on said amplitude control loop and restricting a frequency band of said amplitude control loop is configured by a first passive filter with lag-lead characteristics and a second passive filter of a perfect integrator type, and current-output type circuits are provided at respective front stages of said first passive filter and said second passive filter.

3. The transmitter according to claim 1,

wherein in a first operating mode a phase and amplitude modulation by said phase control loop and said amplitude control loop is performed to transmit a signal; in a second operating mode a phase modulation by said phase control loop is performed to transmit a signal; and in said first operating mode and said second operating mode said phase control loop is in common used to perform a phase modulation.

4. The transmitter according to claim 3,

wherein said first passive filter is provided at a front stage thereof prior to said second passive filter.

5. The transmitter according to claim 4,

wherein said current-output type circuit provided at a front stage of said second passive filter is designed to configure a perfect integrator circuit comprising said current-output type circuit, said second passive filter, and a circuit provided at a rear stage of said second passive

filter.

6. The transmitter according to claim 1,

wherein a first automatic gain controlled amplifier is provided on a feedback path from said power amplifier to said amplitude detector in said amplitude control loop; a second automatic gain controlled amplifier is provided on a forward path from said amplitude detector to said power amplifier in said amplitude control loop; and gains of said first and second automatic gain controlled amplifiers are controlled such that a product of the gain of said first automatic gain controlled amplifier and said gain of the second automatic gain controlled amplifier are kept approximately constant.

7. The transmitter according to claim 1,

wherein a bias is given such that said power amplifier is operated in a nonlinear area in both of said first and second operating modes.

8. The transmitter according to claim 1,

wherein said power amplifier is configured by a field effect transistor, and a voltage generated in said amplitude control loop is applied to one of a drain and a source of said field effect transistor to control a gain of said transistor.

9. A wireless communication apparatus comprising the transmitter according to claim 1, a base band circuit for generating a base band signal on the basis of transmission data, and a modulator for performing a phase modulation and

an amplitude modulation in accordance with a base band signal generated in said base band circuit.

10. The wireless communication apparatus according to claim 9,

wherein a signal for controlling a gain of said first automatic gain controlled amplifier and a gain of said second automatic gain controlled amplifier is generated in said base band circuit.